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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,849	12/02/2003	Diane C. Boyd	YOR920030323US1 (16890)	3234
7590 11/16/2005			EXAMINER	
STEVEN FISCHMAN, ESQ SCULLY, SCOTT, MURPHY AND PRESSER 400 GARDEN CITY PLAZA GARDEN CITY, NY 11530			QUACH, TUAN N	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/725,849	<b>Applicant(s)</b> BOYD ET AL.	
	<b>Examiner</b> Tuan Quach	<b>Art Unit</b> 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 16-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2005, has been entered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 6, 9, 10, 15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Park.

Regarding claims 1, 2, and 6, Park (6,064,092) teaches a semiconducting device comprising a channel region located in silicon 40 on insulating layer 60 of a silicon on insulating substrate including channel region 73 being thinned by presence of an underlying localized oxide region 60a on top of and in contact with buried insulating layer 60, including in the SOI layer as shown in Fig. 3D. The provision of the gate region is met by gate 64 over the channel region. The thickness at the channel region being less than 1000 Å is also taught. See Figs. 3A-3F, column 3 line 19 to column 4 line 27. Note that with respect to the amended feature regarding the oxide having outer edges that are aligned with outer edges of a gate region, and the thermal oxide or implanted oxide in claim 9, these correspond to a product-by-process feature. See specification [0015], [0019], [0028]. Such would have been met or otherwise obvious over the teachings of Park above, particularly as shown in Fig. 3F. In addition to the fact that these correspond to well known thus obvious processing, e.g., thermal oxidation or implantation, or self-alignment or having outer edges aligned with out edges of gate region, note that a "product-by-process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and the related case cited therein which make it clear that it is the final product per se which must be determined in a "product-by-process" claim, and not the patentability of the

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process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product-by-process" claims or not. As stated in *Thorpe*,

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA, 1972); *In re Pilkington*, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969).

Note that the use of 35 U.S.C. 102/103 rejections for product-by-process claims has been approved by the courts.

"[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Claim 3, 7, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park.

Regarding the desired thickness of the channel and the thickness of the oxide region, and the external resistance, such selection and optimization would have been obvious and would have been within the purview of one skilled in the art, given the teachings of Park, the abstract, column 4 lines 3-6.

Claims 4, 5, 8, 10, 11, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park as applied to claim 1 above, and further in view of Xiang.

Although Park does not show the various limitations in these claims, e.g., spacers (claim 4) and the source drain extensions and thickness or dopant (claims 5, 10, and 11), silicide contacts (claim 12), and uniform thickness of buried insulating layer (claim 8) and the isolation (claim 13), Xiang (6,479,866) shows the spacers 30/32 and the source drain extension 46/48 abutting the channel region employing appropriate dopant, e.g, n type or p type dopant depending on the MOS to be formed, the buried insulating layer of uniform thickness, the silicide contacts 54/56, and isolation 82. See Fig. 1, column 3 lines 14-37. The provision of a buried insulating layer 20 of the uniform thickness is also shown, column 3 line 20-21.

It would have been obvious to one skilled in the art in practicing the above invention to have included the features in these claims as suggested by Xiang since such correspond to well known limitations completing the device and providing the desired conventional additional components as taught by Xiang. It would have been obvious and would have been within the purview of one skilled in the art to have optimized the appropriate dimension and layer thickness of the conventional components.

Claim 6 is rejected under 35U.S.C. 103(a) as being unpatentable over Park as applied to claim 1 above, and further in view of the admitted prior art.

Regarding the alternative semiconductor materials in claim 6, Si, SiGe, SiGeC, SiC or combinations thereof as in these claims correspond to well known alternative semiconductor materials as acknowledged in the instant specification, page 9 last paragraph. Alternatively, official notice is given regarding the notoriously conventionality of such alternative semiconductor materials and their interchangeability.

Applicant's arguments filed October 31, 2005 have been fully considered but they are not persuasive.

Applicant argues that the self-aligned feature is a physical structure and not a product-by-process limitation. It remains however that this argument nonetheless is contradicted by the specification, e.g., [0012]-[0028] and applicant has not shown how such localized region is patentable over the structures in the prior art, e.g., region 60a with respect to the structures as shown in Fig. 3A-3F wherein evidencing region 60a with respect to the gate. It further remains that with respect to the self-aligned limitation in claim 1, and the thermal oxide or implanted oxide in claim 9, these correspond to a product-by-process feature. In addition to the fact that these correspond to well known thus obvious processing, e.g., thermal oxidation or implantation, or self-alignment, note that a "product-by-process" claim is directed to the product per se, no matter how actually made. See *In re Thorpe et al.*, 227 USPQ 964 (CAFC, 1985) and the related case cited therein which make it clear that it is the final product per se which must be determined in a "product-by-process" claim, and not the patentability of the process, and

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that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product-by-process" claims or not. Applicant has not pointed out how the aligned feature distinguish over the prior art as shown in Fig. 3F wherein the aligned edges are readily apparent. That the edges are aligned with the outer edges of the gate is readily apparent as shown in Fig. 3F and further corresponds to product-by-process limitations unpatentable for the reasons delineated above.

Applicant further argues that the localized region is a separate layer as opposed to the same layer. The claim nonetheless calls for a localized region which would correspond to the region 62a which is located on top of an in contact with a buried insulating layer and there is no recitation of a separate layer. See claim 1 lines 1-3.

Applicant further argues that there is no motivation to provide a separate layer. This however overlooks the teachings of Xiang, column 3 line 62 to column 4 line 25 wherein region 90 can be formed separately from the buried insulating layer 20 wherein such separate layer would be obvious and advantageous to tailor the dimensions, e.g., length, width, depth, etc. as desired or required.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Tuan Quach whose telephone number is 571-272-1717. The examiner can normally be reached on M-F from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Nathan Flynn, can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Tuan Quach**  
**Primary Examiner**